



WOMEN IN SUSTAINABLE DEVELOPMENT: SCIENCE AND QUALITY EDUCATION

3RD INTERNATIONAL CONFERENCE



ЕВРОПА ИТТИФОҚИ ТОМОНИДАН МОЛИЯЛАШТИРИЛАДИГАН ТАЪЛИМ ВА ИЛМИЙ ТАДҚИҚОТЛАР ДАСТУРИ ДОИРАСИДА АЁЛЛАР УЧУН ИМКОНИЯТЛАР

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Калит сўзлар: аёллар ва қизлар учун имкониятлар, гендер тенглиги, халқаро ҳамкорлик, тадқиқот ва инновациялар, илғор тажрибалар, Эрасмус+ ва Мария Склодовска-Кюри лойиҳалари.

Аннотация: Аёлларни таълим ва илмий-тадқиқот жараёнларига жалб қилишнинг аҳамияти умумэтироф этилган ҳақиқатдир. Ўзбекистонда олий таълим тизимидаги сўнгги беш йиллик ислохотлар давомида жуда муҳим давлат қарорлари қабул қилинди ва хотин-қизларнинг олий таълим олиш имкониятини кенгайтириш ва ёш аёллар учун стипендиялар сонини ошириш бўйича аниқ чора-тадбирлар амалга оширилмоқда. Бундан ташқари, уларнинг ўқув жараёни ва илмий тадқиқотлардаги иштирокини фаоллаштириш ва кенгайтириш бўйича яна кўплаб қўллаб-қувватлаш чоралари кўрилмоқда.

Мақолада таълим ва илмий-тадқиқот соҳасида Европа Иттифоқи томонидан молиялаштириладиган дастурлар доирасида аёллар ва қизларга тақдим этиладиган имкониятлар баён қилинган. Муаллифлар аниқ чора-тадбирлар ва ташаббусларни ёритади, шунингдек, аёллар ва қизларни қўллаб-қувватлашга оид мисоллар келтиради, бу эса олима аёллар ўртасида илмий салоҳиятни ошириш ва ўзаро тажриба алмашишда ҳар томонлама ёрдам кўрсатиш, ўз танловини, илмий йўналишига эга қизларни рағбатлантиришга мисол бўла олади. Мақола Эрасмус+ дастури ва Мария Склодовска-Кюри Ҳаракатлари (МСКХ) доирасидаги қўшма лойиҳаларнинг қисқача тавсифи билан якунланади.

Муаллифлар асосан Эрасмус+ амалий тадқиқотларидаги энг яхши тажрибалар ва аёллар ва қизлар учун МСКХ доирасидаги имтиёзларига эътибор қаратган.

THE OPPORTUNITIES FOR WOMEN WITHIN THE EU-FUNDED PROGRAMME FOR EDUCATION AND SCIENTIFIC RESEARCH

Key words: opportunities for women, gender equality, international cooperation, research and innovation, best practice, EU-funded projects Erasmus+ Marie Skłodowska-Curie Actions

Abstract: The importance of involving women in the educational and research processes is a generally recognized fact. In the past five years of reforms in the higher education system of Uzbekistan, very important government decisions have been taken and concrete measures have already been taken to increase the access of women to higher education and the number of grants to young women. Moreover, another set of support measures is envisaged in order to enhance and to extend of their participation in the educational process and in scientific research.

The article presents the opportunities provided to women and girls in the framework of programs funded by the European Union in the field of education and research. The author lists specific measures and initiatives, as well as provides examples of support for women and girls, which can serve as an example of providing all-round assistance in increasing the scientific potential and exchange of experience between women scientists and encouraging girls who have chosen a scientific path. The article concludes with a brief description of joint projects within the framework of the Erasmus + programme and Marie Skłodowska-Curie Actions (MSCA). The author mainly has made a focus on best practice based on specific examples of Erasmus+ projects and the advantages of MSCA provided for women and girls.

ВОЗМОЖНОСТИ ДЛЯ ЖЕНЩИН В ОБРАЗОВАТЕЛЬНЫХ И НАУЧНО-ИССЛЕДОВАТЕЛЬСКИХ ПРОГРАММАХ ЕВРОПЕЙСКОГО СОЮЗА

Ключевые слова: возможности для женщин и девушек, гендерное равенство, международное сотрудничество, исследования и инновации, передовой опыт, проекты Erasmus+ и Марии Склодовской-Кюри.

Аннотация: Важность вовлечения женщин в образовательный и исследовательский процессы является общепризнанным фактом. За последние пять лет реформ в системе высшего образования Узбекистана были приняты очень важные государственные решения и уже предприняты конкретные меры по расширению доступа женщин к высшему образованию и количества стипендий для молодых женщин. Кроме того, предусмотрен еще один комплекс мер поддержки для активизации и расширения их участия в образовательном процессе и научных исследованиях.

В статье представлены возможности, предоставляемые женщинам и девушкам в рамках программ, финансируемых Европейским Союзом в области образования и научной деятельности. Автором

перечисляются конкретные меры и инициативы, а также приводятся примеры поддержки женщин и девушек, которые могут послужить примером оказания всемерной помощи повышению научного потенциала и обмена опытом между женщинами –учеными и поощрения девушек, выбравших научную стезю. В заключении статьи содержится краткое описание совместных проектов в рамках программы Erasmus+ и Maria Sklodowska Curie Actions (MSCA).

One of the main objectives of the EU Erasmus+ Programme is the promotion of European values in accordance with Article 2 of the Treaty on European Union: 'The Union is founded on the values of respect for human dignity, freedom, democracy, equality, the rule of law and respect for human rights. These values are common to the Member States in a society in which pluralism, non-discrimination, tolerance, justice, solidarity and equality between women and men prevail'.

Two EU programmes Erasmus+[1] and Maria Sklodowska Curie Actions (MSCA) [2]. have one of the main objectives to favor the participation of women in science and highlight their role in different subjects at European and international level.

The gender gap widens: The World Economic Forum predicts that the gender gap in employment will not be closed until the year 2133. The most important force for change is **inspiration**. The EU activities promote female role models, to inspire girls and women all over the world to participate in science.

There are the following measures in the European Union to tackle this gap by improving gender equality in study choices and later in career choices and career paths for women.

EU Digital Education Action Plan

The Commission actively addresses the **gender digital skills gap in education and training** on all levels with the **Digital Education Action Plan (2021-2027)**. This is fully in line with the ambitious targets set in the **Digital Decade** - Europe's vision for a successful digital transformation. **The Plan** includes several targeted actions to boost the participation of girls and women in STEM, such as the **Girls and Women ESTEAM Fests**. These are safe spaces for

girls and women of all ages to improve their **digital and entrepreneurial competences**. They can learn how to build a mini-enterprise, boost their financial literacy, learn coding and robotics, or design digital tools.

More specifically, the Digital Action Plan includes a dedicated action (action 13) to increase women and girls' participation in STEM. It is comprised of two main initiatives:

A. Girls Go Circular

Girls Go Circular's overall objective is to contribute to increase participation and careers of women in digital and STEM fields, including entrepreneurship. The action is implemented by the European Institute of Innovation and Technology (EIT).

It aims to bridge the gender gap by building the digital and entrepreneurship skill sets of girls and young women through an **online learning programme** focused on concrete societal challenges related to the circular economy. **Girls Go Circular** is training 10,000 girls in secondary schools (aged 14-19) through its online learning programme to build digital and entrepreneurial skills for the circular economy.

Inspired scientists show a willingness to experiment, a reliance on logic and evidence and a focus on creative problem-solving. These are key skills for creativity and entrepreneurship too.

Boosting women's entrepreneurship is a priority consideration for the **New European Innovation Agenda**, resulting in actions such as Women Tech EU and Women4Cyber. The European Institute of Innovation & Technology (EIT) has a gender mainstreaming plan with a Women@EIT network and an EIT Woman award.

B. ESTEAM Fests

The goal is to enhance the digital and entrepreneurial competences of girls and women and boost their confidence to use those competencies creatively to spot opportunities, innovate and create value for society. This will be done by creating a learning environment in the form of successive **Girls/Women ESTEAM**

(Entrepreneurship, Science, Technology, Engineering, Arts and Mathematics) “**Fests**”, where learners can develop their competences, as well as their confidence and creativity. In addition to the physical events, **ESTEAM online communities** have been launched to sustain the momentum of the events and allow the women and girls to keep learning and connecting with their peers online. Throughout the 3 year-project, **11 ESTEAM Fests will be organized in 19 EU Member States.**

The importance of supporting female participation in science-focused education and careers is evident. Some examples of how this importance is reflected in EU policy and programmes will help to promote the opportunities and initiatives for women and girls provided by Erasmus+ and Maria Skłodowska Curie Actions (MSCA).

Marie Skłodowska-Curie Actions – named after Europe’s most famous female scientist support researchers to take part in excellent research programmes. They recognise the gender gap and pay particular attention to work-life balance provisions, equal pay and family allowances. 42% of all MSCA researchers are women (2014-20).

The Marie Skłodowska-Curie Actions (MSCA) are part of the EU’s Horizon 2020 programme for research and innovation. They support the training, career development and mobility of researchers in all scientific domains, at all stages of their careers and from all over the world.

From 2014 to 2020, the MSCA have funded the mobility and career development of around 65 000 researchers, including 25 000 doctoral candidates - through over 1 000 doctoral programmes, almost 10 000 postdoctoral fellowships, nearly 600 collaborative research and innovation staff exchange projects and over 200 co-funded research training programmes.

Specific gender provisions in the MSCA

The MSCA are the most gender-balanced part of Horizon 2020, with 42% of all participating researchers being female. The share of female researchers is

higher among doctoral candidates (46%) and postdoctoral researchers (42%) involved in the programme, but lower among research and innovation staff (38%).

Under Horizon Europe, the MSCA has been made even fairer, more gender-friendly and inclusive by making family allowances accessible to all researchers during the whole project duration and by introducing a long-term leave allowance for employing institutions in case of the researchers' leave, including maternity, paternity, parental, sick or special leave. The programme is also applying the strengthened gender equality provisions foreseen in the new framework programme, including the roll-out of Gender Equality Plans (GEPs) as an eligibility criterion as from 2022.

Erasmus+ is the EU's programme to support education, training, youth and sport in Europe. It has an estimated budget of €26.2 billion. This is nearly double the funding compared to its predecessor programme (2014-2020). The 2021-2027 programme places a strong focus on social inclusion, the green and digital transitions, and promoting young people's participation in democratic life. It supports priorities and activities set out in the European Education Area, Digital Education Action Plan and the European Skills Agenda.

A number of relevant Erasmus+ projects providing motivating/inspiring pedagogies, including STEAM, and also focusing on gender-balanced approach to STEM education can be found on the Erasmus+ platform [3].

Some of them were examined in more detail as case studies in the recent publication: **Data collection and analysis of Erasmus+ projects. Focus on inclusion in education** [4].

Education in mathematics in game based immersive contexts. This project gathered a multidisciplinary group of partners – programmers, researchers and teachers from different expertise areas – to develop a cutting-edge educational game to make learning mathematics fun and improve mathematical skills for all types of learners. The game, Clash of Wizardry, can be downloaded for free on Google Play and the Apple App Store, and is therefore widely accessible. It introduces an innovative teaching approach that can help teachers support students

in effective mathematics learning, improving their school achievements and success, and inspiring students to become interested in STEM subjects [5].

Tinkering EU: building science capital for all

‘Tinkering EU: building science capital for all’ (Tinkering EU) used the innovative pedagogical method of ‘tinkering’ with the aim of developing 21st-century skills and the science capital of young people, as well as improving science education in schools overall. It addressed students in primary / lower-secondary education and their teachers, as well as museum / science centre staff. Among other activities, it developed a series of tinkering activities for schools; a methodological framework for the use of tinkering to develop the science capital of young people; small-scale training for teachers and museum staff; and a self-reflection tool for teachers to examine the impact of their practice [6] (See case study 1).

Motivating secondary school students towards STEM career through hologram making The project infused arts into STEM (leading to STEAM), linked STEAM to real life and current laboratory practices and engaged students in hologram making. Hologram making was used as a creative vehicle to bring the school community closer to the research community, familiarize students with laboratory practices in the area of STEAM, demonstrate scientific techniques through the practical use of a range of technologies and tools, and challenge students’ thinking on the underlying scientific concepts [7]. (See project 110 in the inventory of good practices)

Pollution! Find a STEM solution

There were 34 activities implemented in the project, which were divided into four categories: (1) STEM activities focused on building the devices for measuring air, light and noise pollution in students’ schools and homes; analyzing the data using the scientific method and comparing the results with their peers to find a solution to the pollution; (2) Promoting e-skills, digital literacy and digital jobs through introducing career opportunities in STEM and ICT, meeting with scientists and engineers and developing 21st-century skills including e-skills in order for

students to become more employable in the future; (3) In clean technology and clean energy activities, students built model windmills and solar collectors and visited at least three different clean technology and engineering facilities; (4) Raising cultural awareness and promoting the European dimension [8] (See project 95 in the inventory of good practices).

GirlsTech

The project set the goal of supporting the participation of women in the field of Science, Technology, Engineering and Mathematics (STEM). The projects achievements can be categorized in four main findings: First of all, gender stereotypes in STEM start early. Secondly, educators need to consider female entrance in STEM as a strategic priority. Thirdly, in order to engage girls teaching strategies should be redesigned. Lastly, retaining women in the STEM workforce is important. The open exchange of practices and ideas between the different EU countries led to creating an added value for the target group beyond the national context [9].

Expanding the use of the Gender Equality Charter Mark for Schools (GECM) across Europe

This strategic partnership sees the education sector as a key area regarding gender equality. There is a ‘hidden curriculum’ that is restricting life choices. This GECM is a ‘whole-school approach’ to equip schools to build environments that enable children to critically engage with and make sense of a range of complex issues associated with gender equality. The GECM enables a school to show a measurable change and progress in five key areas of school life: leadership, curriculum, physical environment, attitudes and relationships, and the wider community [10].

Towards Gender Sensitive Education

The main objective of the project was to enhance the gender sensitivity of current and future teachers through developing, piloting and disseminating a methodology for training in gender-sensitive education. The project was targeted at

current and future teachers and aimed to help them develop their competences in dealing with gender diversity and equity in their classroom [11].

Capacity-building projects in the field of higher education [12] are transnational cooperation projects, based on multilateral partnerships, primarily between higher education institutions from EU Member states or countries associated to the Programme and third countries not associated to the Programme. The aim of these projects is to support eligible third countries not associated to the Programme to

- modernise, internationalise and increase access to higher education
- address the challenges facing their higher education institutions and systems
- increase cooperation with the EU
- voluntarily converge with EU development in higher education, and
- promote people to people contacts, intercultural awareness, and understanding.

Erasmus+ provides the opportunity for organisations from eligible Partner Countries, mainly higher education institutions (HEIs), to promote cooperation through actions that:

- improve the quality of higher education and its alignment with labour market needs,
- improve the level of skills in HEIs through new education programmes,
- strengthen the capacity of management, governance, and innovation, as well as internationalisation,
- build the capacity of national authorities to modernise their own higher education systems, and
- foster regional integration and cooperation across different regions of the world.

Capacity building projects typically focus on one of three main activities:

1. curriculum development activities
2. modernisation of governance and management of HEIs and systems

3. strengthening of relations between higher education and the wider economic and social environment

There two examples of related CBHE among 145 projects selected in 2022.

“WE4HER Leadership”. The overall objective of CBHE “WE4HER Leadership” is to transform the governance of Mediterranean Higher Education Institutions (HEIs) through the promotion and adoption of a culture of gender equality. More specifically, “WE4HER Leadership” aims to increase the proportion of women among the top decision-making bodies of the HEIs, thereby contributing to a more inclusive management and governance of these institutions. Indeed, while women are in the majority among the lower echelons, they become a minority as you rise in the hierarchy. The existence of such an injustice not only deprives the HEIs of half of their available human capital, but it is also harmful to the University communities and to society as a whole

“STEM for ALL – STEFORA” is a result from the on-going STINT project funded by the Swedish Government, where diversity and gender equality are identified as topics of interest aiming at sharing knowledge and experiences in terms of frameworks and empirical studies to investigate Generation Z’s enrolment and involvement in the development of STEM.

Women scientists are leading ground-breaking research across the world. But despite their remarkable discoveries, women still represent just 33,3 %* of researchers globally, and their work rarely gains the recognition it deserves. Less than 4 % of Nobel Prizes for science have ever been awarded to women, and only 11 %* of senior research roles are held by women in Europe.

However, there is still much more to be done to achieve true gender equality in science. But we remain determined, and we are moving steadily towards making our vision a reality. One day, we will live in a world where girls are encouraged to study science, where women have adequate support to balance the responsibilities of research and motherhood, and where scientists are judged purely on the merit of their discoveries and the potential of their work to change the world. The described the EU on-going actions and projects supporting and strengthening the role of

women in science and in overall enhancing the education quality should inspire the decision-makers and higher education community to undertake the relevant initiatives at national level in addition to a number of supporting measures developed for the last years of sweeping reforms in the country.

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